RECREATION IN THE MUSKINGUM

by

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Natural Resources 693.05
Honors Project
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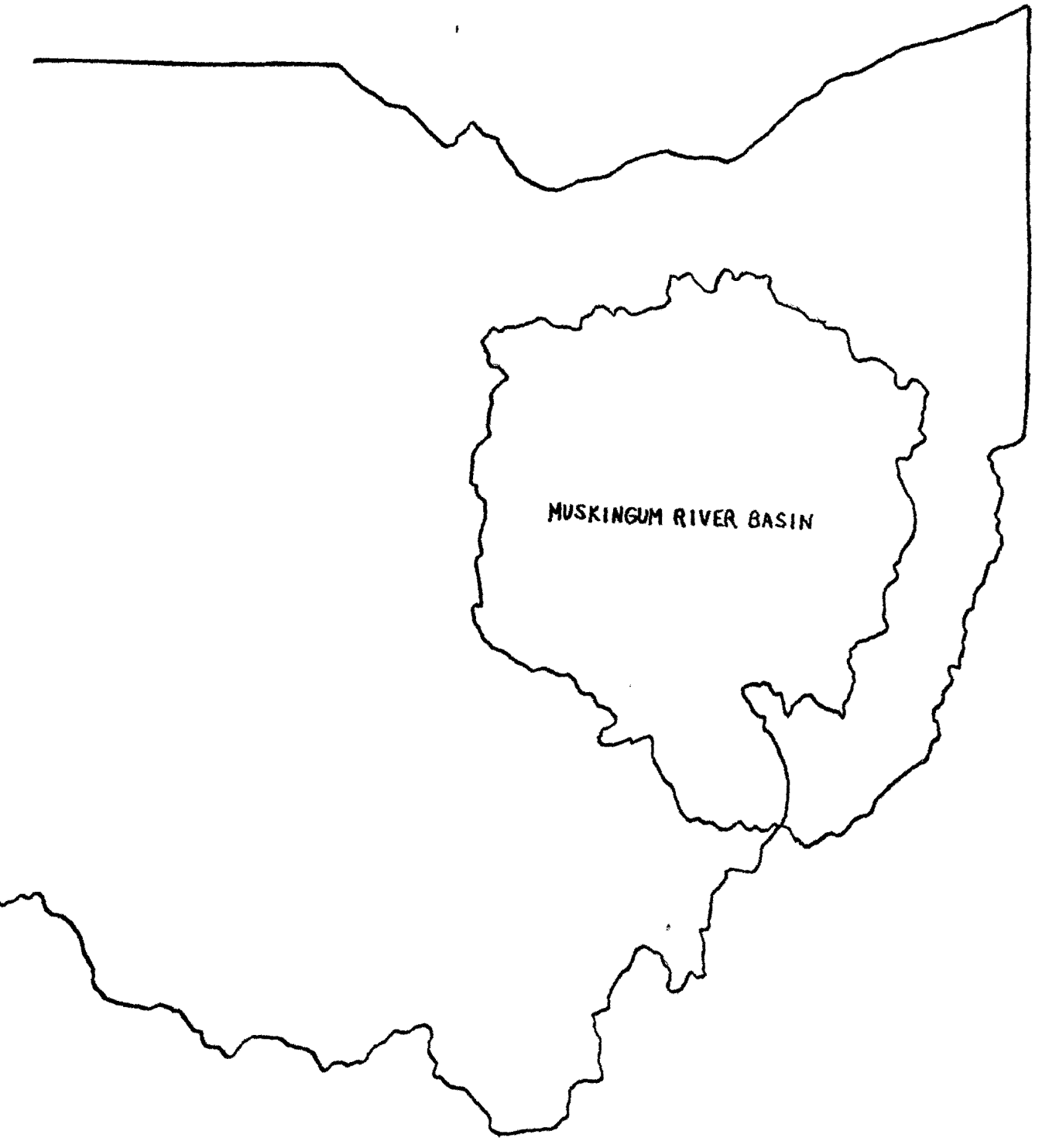

MUSKINGUM RIVER BASIN

PREFACE

The purpose of this study is to put together an up-to-date picture of the resources in the Muskingum River Basin that are available for water-based recreation, to provide an analysis of the need for additional facilities, and to explore the potential future supply.

The study was conducted in conjunction with the Ohio River Basin Commission in Cincinnati. The Commission uses existing information to formulate a Comprehensive Coordinated Joint Plan for water and related land resources projects in the Ohio River Drainage Basin. The Muskingum Basin represents a significant part of their area, as it makes up about one-fifth of the State of Ohio. The Commission's methodology was followed in compiling this report. Numerous visits were made to the Ohio Department of Natural Resources Offices, which provided complete access to their files concerning the region. A great deal of information was obtained from the Muskingum Watershed Conservancy District in New Philadelphia, Ohio. Contact was made with County Regional Planning Commissions, but their response was very minimal. The Huntington District, Army Corps of Engineers provided some data; communication with them was rather difficult because of the distance involved.

The Ohio River Basin Commission has very little information on recreation in the Muskingum Basin. The existing data for this area is in the form of numerous separate reports in the offices of the various agencies with water-related projects. The Corps of Engineers data pertains only to the projects over which they have jurisdiction. The same case holds true for the State and the Conservancy District. Furthermore, State planning is done on a regional basis that does not recognize hydrologic boundaries. For these reasons, it was necessary to contact the various agencies to obtain the information necessary for a comprehensive report. The Commission may ultimately use the data in documents to secure funds for projects in the region.

RECREATION IN THE MUSKINGUM

The Muskingum River lazily meanders through the rugged terrain of Coshocton, Muskingum, Morgan, and Washington counties in Southeast Ohio. Its 112.4 mile journey, from its origin at the conflux of the Walhonding and Tuscarawas Rivers in Coshocton to Marietta on the Ohio, makes it the largest river lying wholly within the State of Ohio. The watershed drainage area is 8,051 square miles, or about one-fifth of the total area of the State. There are four principal tributary systems of the Muskingum River; the Tuscarawas River, the Walhonding River, the Licking River, and Wills Creek. (Figure 1)

The natural range in topography, vegetation, and geologic conditions provides variety throughout the drainage basin of the Muskingum. Glaciation of the northern portion created moderately rolling till plains with a predominance of farmland and urban development interspersed with small scattered wooded areas. The Kokosing, Mohican, and Tuscarawas Rivers wind through this northern half of the Basin. In contrast, Wills Creek and the Licking River twist through the rugged southern part of the Basin. Steeper forested slopes and hills noted for their fiery autumn foliage and green pines of winter characterize this area. Meandering streams through valleys with well-kept farmsteads nestled in the forested hillsides provide picturesque sights. Conglomerate rock outcroppings and glacial inconsistencies also add to the natural beauty of the Basin.

Numerous factors make up the natural beauty of the Muskingum area. Many unusual plant associations have arisen from the unique hillside springs, marshes, and wetland areas. The abundant streams, reservoirs , and farm ponds of the Basin provide much high quality warm water fish habitat. Reserviors and 26,052 acres of streams support boating and canoeing activities. The natural diversity of the Muskingum River drainage area makes it an ideal recreation area.

Because of its convenient location, the recreational resources of the Muskingum are not limited to the five cities of Canton, Mansfield, Massilon, Newark, and

MUSKINGUM RIVER BASIN

FIGURE 1

Zanesville, which lie within the hydrologic boundary. The transportation network of Interstate 71, Interstate 70, and Interstate 77, provides easy access to the region for the cities of Columbus, Cleveland, Charleston, Akron, Wheeling, and Pittsburgh. With increasing use of natural areas for recreation and a greater focus on water-based recreation, the recreation capacities and capabilities of the Muskingum drainage basin warrant attention.

INVENTORY

The State of Ohio has recently completed a recreation inventory for the entire state, with both public and private facilities accounted for. Public water-based recreation facilities in the Muskingum drainage basin are listed by county in Table 1 . The total fishing acres they provide is 28,900 and total boating acres equal 27,621. For the entire Muskingum Basin, total acres on which boating is allowed is 54,300; total miles of shoreline for fishing is 2,568 (13,559,040 shore-feet).

The majority of the public facilities are provided by the Muskingum Watershed Conservancy District, which owns ten lakes with a total water surface area of 16,030 acres. Water acres owned by the Ohio Department of Natural Resources total 10,773. Buckeye, Dillon, Portage and Salt Fork Lakes account for more than 10,000 acres of the total. Twelve State Wildlife Areas, with a total of 694 water acres, represent the other principal state-owned areas.

There are five State nature preserves which lie in the Basin. Three of these areas are water-related. Blackhand Gorge Nature Preserve in Licking County is a narrow gorge cut by the Licking River through the Blackhand formation, a sandstone of the Mississippian Age. Remnants of the Ohio-Erie Canal are present within the preserve. The second area is Clear Fork Gorge in Ashland County. This preserve lies within the four-mile segment of the Clear

TABLE 1

FACILITY/ OWNER	LOCATION	ACRES LAND	ACRES WATER	FISHING ACRES	FISHING SHORE-FEET	BOATING ACRES	BOATING RAMPS	NATURAL AREA ACRES
ASHLAND RESERVOIR/ City of Ashland	ASHLAND	38	20	20				
CHARLES MILL RESERVOIR/ Muskingum Cons. Dist.	ASHLAND	808	273	273		136		
PLEASANT HILL RESERVOIR/ Muskingum Cons. Dist.	ASHLAND	561	307	307		307		
BARNESVILLE PARK/ Village of Barnesville	BELMONT	20	15	15				
PIEDMONT LAKE/ Muskingum Cons. Dist.	BELMONT	3935	1906	1906		1906		
ATWOOD LAKE/ Muskingum Cons. Dist.	CARROLL	2089	1131	1131		1131	4	
LEESVILLE LAKE AREA/ Muskingum Cons. Dist.	CARROLL	2625	1000	1000		1000		
ZEPERNICK LAKE WILDLIFE AREA/ State of Ohio	COLUMBIANA	473	41	41		41		
COSHOCTON LAKE PARK/ City of Coshocton	COSHOCTON	235	15	0	3500			
WILLS CREEK LAKE/ Muskingum Cons. Dist.	COSHOCTON	1833	709	709		709		
WOODURY WILDLIFE AREA/ State of Ohio	COSHOCTON	1960	7	7		7		
BUCKEYE LAKE STATE PARK/ State of Ohio	FAIRFIELD	20	1669	1669	52,800	1669	5	
GREENFIELD DAM WILDLIFE AREA/ State of Ohio	FAIRFIELD	32	14	14		14		
CAMBRIDGE RESERVOIR/ City of Cambridge	GUERNSEY	3	26	26	5000			

[1] Public Inventory, Ohio Department of Natural Resources, July 16,1976

FACILITIES INVENTORY BY COUNTY

FACILITY/ OWNER	LOCATION	ACRES LAND	ACRES WATER	FISHING ACRES	FISHING SHORE-FEET	BOATING ACRES	BOATING RAMPS	NATURAL AREA ACRES
PIEDMONT LAKE/ Muskingum Cons. Dist.	GUERNSEY	82	4	4		4		
SALT FORK STATE PARK/ State of Ohio	GUERNSEY	17491	2952	2952	390,720	2952	12	15,000
SENECA LAKE/ Muskingum Cons. Dist.	GUERNSEY	789	672	672		672		
CLENDENING LAKE/ Muskingum Cons. Dist.	HARRISON	4780	1800	1800		1800		
PIEDMONT LAKE/ Muskingum Cons. Dist.	HARRISON	314	360	360		360		
TAPPAN LAKE/ Muskingum Cons. Dist.	HARRISON	4974	2350	2350		2350		
KNOX LAKE WILDLIFE AREA/ State of Ohio	KNOX	266	495	495		495	3	
KOKOSING RESERVOIR/ United States	KNOX	1554	154	154		154		
BUCKEYE LAKE STATE PARK/ State of Ohio	LICKING	10	766	766		766	3	
GREENLEAF PARK/ Medina County Park Dist.	MEDINA	33	2	2				
MONROE WILDLIFE AREA/ State of Ohio	MONROE	1294	39	39		39		
CROOKSVILLE RESERVOIR/ VILLAGE of CROOKSVILLE	MORGAN	7	15	15	5,280			
CLEAR FORK RESERVOIR/ City of Mansfield	MORROW	377	258	258		258		
BLUE ROCK STATE PARK/ State of Ohio	MUSKINGUM	4895	15	12	4,861	12	1	194

FACILITY/ OWNER	LOCATION	ACRES LAND	ACRES WATER	FISHING ACRES	FISHING SHORE-FEET	BOATING ACRES	BOATING RAMPS	NATURAL AREA ACRES
DILLON STATE PARK/ State of Ohio	MUSKINGUM	5900	1650	1650		1650	4	
MUNROE WILDLIFE AREA/ State of Ohio	MUSKINGUM	17		17		17		
POWELSON WILDLIFE AREA/ State of Ohio	MUSKINGUM	2692	5	5				
WILLS CREEK LAKE/ Muskingum Cons. Dist.	MUSKINGUM	828	191	191		191		
SENECA LAKE/ Muskingum Cons. Dist.	NOBLE	1412	1439	1439		1439		
SENECA LAKE #2/ Muskingum Cons. Dist.	NOBLE	1413	1439	1439		1439		
AVONDALE WILDLIFE AREA	PERRY	1680	20	20				
BUCKEYE LAKE/ State of Ohio	PERRY	846	846	846	79,200	846	4	
CLOUSE LAKE WILDLIFE AREA/ State of Ohio	PERRY	53	41	41		41		
CROOKSVILLE PARK/ Village of CROOKSVILLE	PERRY	23	2		1200			
CHARLES MILL RESERVOIR/ Muskingum Cons. Dist.	RICHLAND	441	1077	1077		1077		
CLEAR FORK RESERVOIR/ City of Mansfield	RICHLAND	701	737	737		737		
LIBERTY PARK/ City of Mansfield	RICHLAND	21	2	2				
NORTH LAKE PARK / City of Mansfield	RICHLAND	6	4	4		4		

FACILITIES INVENTORY BY COUNTY

FACILITY/ OWNER	LOCATION	ACRES LAND	ACRES WATER	FISHING ACRES	FISHING SHORE-FEET	BOATING ACRES	BOATING RAMPS	NATURAL AREA ACRES
PLEASANT HILL RESERVOIR/ Muskingum Cons. Dist.	RICHLAND	927	543	543		543		
BEACH CITY RESERVOIR/ Muskingum Cons. Dist.	STARK	36	28	28		28		
MONUMENT PARK/ City of Canton	STARK	32	3	3				
OHIO CANAL FISHING AREA/ Village of Navarre	STARK=	1	1	1	1000			
RESERVOIR PARK City of Canton	STARK	16	10	10				
WORKHOUSE LAGOON/ City of Canton	STARK	2	2	2				
LAKE ANNA PARK/ City of Barberton	SUMMIT	11	10	10		10		
PORTAGE LAKE STATE PARK/ State of Ohio	SUMMIT	285	2150	2150		2150		
NIMISILA RESERVOIR/ City of Akron	SUMMIT	414	811	811		811		
ATWOOD LAKE/ Muskingum Cons. Dist.	TUSCARAWAS	733	409	409		409		
BEACH CITY RESERVOIR/ Muskingum Cons. Dist.	TUSCARAWAS	894	392	392		392		
TUSCORA PARK/ City of New Philadelphia	TUSCARAWAS	35	2	2	1500			
ZOAR WILDLIFE AREA/ State of Ohio	TUSCARAWAS	28	15	15		15		
SHREVE LAKE WILDLIFE AREA/ State of Ohio	WAYNE	170	58	58		58	1	

Fork of the Mohican River, where a stream reversal was caused when glacial deposits blocked a westward-flowing stream. In 1967 the Gorge was dedicated as a National Natural Landmark because if its geological significance. The last area is Cranberry Bog in Licking County, a "floating island" composed entirely of sphagnum moss and other compacted vegetation. When Buckeye Lake was impounded in 1830, the water covered most of the Bog. A portion of the mat broke free and continued to float on the surface. Many unusual plants are found on the island which is in extremely fragile condition.

Another State-owned recreation facility which does not appear in the county inventory is the Muskingum River Parkway. In 1958 the state assumed responsibility for the series of ten locks and dams from the Army Corps of Engineers, as they were no longer used for commercial purposes. Through continued maintenance dredging, the state makes it possible for pleasure boaters to travel the entire length of the Muskingum to the Ohio and Mississippi Rivers. Fishing is permitted along the entire length of the Parkway and at least four of the lock areas have boat launching ramps.

Although Private recreation facilities in the Basin are no where as numerous or as complex as publicly-owned facilities, they make up an important part of the total recreation supply in the Muskingum area. Facilities include private fishing lakes, private stream access points, canoe liveries, and private lakes developed for real estate purposes. Privately owned facilities provide over 2,500 boating acres and more than 3,800 fishing acres, A listing of private facilities totals by county appears in Table 2 . These figures include only facilities operated for recreational use and do not reflect the many acres in the farm ponds of the region. Other private recreational facilities include areas owned by utility companies that have been strip-mined for coal. These areas have been partially reclaimed, but the water acres they include display poor water quality due to sedimentation and acid mine drainage.

TABLE 2

COUNTY PRIVATE FACILITY TOTALS[2]

COUNTY	BOATING (acres)	FISHING (acres)
ASHLAND	260	106
BELMONT	4	14
CARROLL	67	88
COLUMBIANA	265	518
COSHOCTON	56	57
FAIRFIELD	25	55
GUERNSEY	97	178 ?
HARRISON	208	29 ?
HOLMES	76	108
KNOX	517	523
LICKING	10	232
MEDINA	381	488
MONROE	17	24
MORGAN	0	1
MORROW	4	41
MUSKINGUM	100	115
NOBLE	0	9
PERRY	0	0
RICHLAND	239	43
STARK	288	281 ?
SUMMIT	47	52
TUSCARAWAS	5	22
WASHINGTON	229	1049
WAYNE	64	178

[2]Private Inventory, Ohio Department of Natural Resources. July 16,1976

RECREATION DEMAND

Public and private recreational development within the Muskingum drainage area is extensive. However, the demand for water-based recreation in the region significantly exceeds the available supply. Transfer of demand into the area from major urban centers accounts for much of the present and future needs. Table 3 shows demand for boating, canoeing, and fishing for 1975, 1980, and 1990 by county. The figures reflect the needs after transfer of demand has occurred as determined by the Department of Natural Resources.

Boating represents the most crucial water-based recreation need in the Muskingum drainage basin. Figure 2 shows which of the counties with more than three-fourths of their total area within the Basin have boating deficits and which have surpluses. Because over one-third of the boating activities occur outside of the county of residence,[3] counties such as Harrison, Guernsey, Morgan, and Washington can absorb some of the demand from surrounding counties. These counties have surpluses after transfer of demand, as shown by Table 3. By 1990 more than 36,800 acres will be needed just in the counties that have a majority of their area in the Basin. The highly populated areas of Summit and Columbiana Counties have the largest needs, and will undoubtedly draw upon the other counties to satisfy their demands.

Fishing demand also reflects a need for more facilities. However, the need does not appear in the fourteen major counties until 1990, when the forecasted deficit is 673.5 acres. Figure 3 shows the major counties with sufficient facilities and those in need of additional facilities. More fishing activity could be transferred into the counties with negative needs, but usually only about ten percent of the fishing demand is carried outside the county of origin.[4]

[3] 1975-1980 State Comprehensive Outdoor Recreation Plan, Ohio Department of Natural Resources. July, 1976. p.71

[4] Ibid. p.89

TABLE 3

BOATING NEEDS BY COUNTY-ACRES

COUNTY	1975	1980	1990
* ASHLAND	1787.5	2067.2	2493.1
BELMONT	-1170.3	-859.0	-403.3
* CARROLL	1559.7	1945.2	2541.5
COLUMBIANA	6696.6	7524.3	8616.7
* COSHOCTON	1034.4	1306.6	1696.7
FAIRFIELD	3458.2	4086.6	5175.1
* GUERNSEY	-283.1	33.2	531.5
* HARRISON	-1499.6	-1263.6	-924.3
* HOLMES	677.9	789.5	980.6
* KNOX	1503.4	1782.0	2209.9
* LICKING	3305.5	3825.8	4729.1
MEDINA	2676.8	3049.0	3714.8
MONROE	-2930.0	-2830.8	-2701.1
* MORGAN	-1081.7	-991.4	-861.2
MORROW	221.1	287.0	396.1
* MUSKINGUM	1409.8	1834.8	2448.1
NOBLE	-1752.8	-1622.9	-1434.1
PERRY	254.1	356.4	515.1
* RICHLAND	4120.6	4788.2	5841.8
* STARK	7793.7	8869.4	10879.2
SUMMIT	19751.4	22189.9	25977.8
* TUSCARAWAS	2830.8	3255.8	3899.5
WASHINGTON	-7721.5	-7131.6	-7411.0
* WAYNE	1522.9	1722.9	2077.4

* Counties with more than three-fourths of their total area within the Basin

FISHING NEEDS BY COUNTY-ACRES

	COUNTY	1975	1980	1990
*	ASHLAND	-130.2	-38.1	82.9
	BELMONT	-4350.9	-4243.4	-4062.3
*	CARROLL	-1958.9	-1896.7	-1804.7
	COLUMBIANA	-1151.5	-959.9	-745.5
*	COSHOCTON	-1437.2	-1381.6	-1315.5
	FAIRFIELD	-3.2	213.4	593.5
*	GUERNSEY	-3042.8	-2954.2	-2796.6
*	HARRISON	-4184.1	-4148.1	-4091.6
*	HOLMES	-16.0	22.5	94.3
*	KNOX	-796.7	-732.6	-641.6
*	LICKING	925.2	1169.2	1613.8
	MEDINA	1042.4	1247.2	1708.4
	MONROE	-3766.9	-3729.5	-3674.7
*	MORGAN	-1883.3	-1856.8	-1814.9
	MORROW	-73.8	-37.8	24.3
*	MUSKINGUM	-2009.4	-1886.9	-1721.9
	NOBLE	-3061.7	-3035.8	-2996.7
	PERRY	-329.7	-290.1	-226.4
*	RICHLAND	737.4	1070.4	1634.0
*	STARK	6531.8	7417.1	9189.0
	SUMMIT	9938.7	11281.7	13533.6
*	TUSCARAWAS	-151.5	-24.8	165.5
	WASHINGTON	-11509.4	-11387.9	-11438.7
*	WAYNE	1505.7	1702.2	2080.8

*Counties with more than Three-fourths of their total area within the Basin

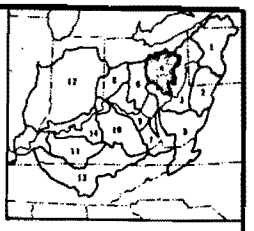
CANOEING NEEDS BY COUNTY-MILES

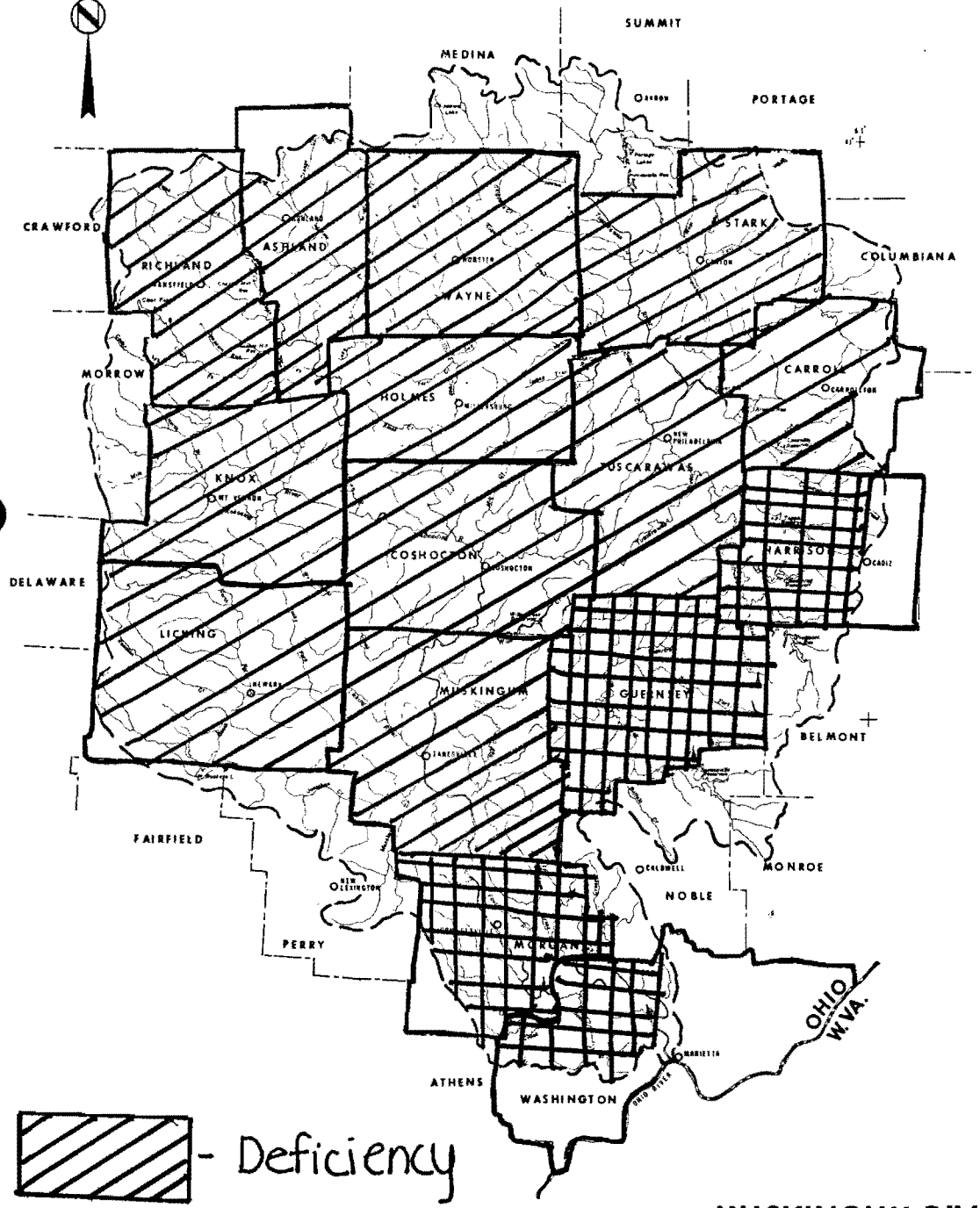
	COUNTY	1975	1980	1990
*	ASHLAND	0.8	2.9	6.3
	BELMONT	1.9	2.1	2.6
*	CARROLL	0.6	0.6	0.7
	COLUMBIANA	13.9	16.0	18.3
*	COSHOCTON	-30.9	-29.3	-27.6
	FAIRFIELD	-0.5	0.0	0.7
*	GUERNSEY	-3.7	-3.5	-3.3
*	HARRISON	0.2	0.2	0.3
*	HOLMES	-0.6	-0.4	0.1
*	KNOX	-8.2	-7.3	-5.5
*	LICKING	-0.7	-0.1	1.0
	MEDINA	6.4	7.7	10.8
	MONROE	0.1	0.1	0.1
*	MORGAN	-17.6	-17.2	-16.7
	MORROW	0.3	0.3	0.5
*	MUSKINGUM	-22.4	-21.3	-20.1
	NOBLE	0.1	0.1	0.1
	PERRY	0.2	0.2	0.3
*	RICHLAND	0.1	1.1	3.0
*	STARK	-5.6	-2.8	3.1
	SUMMIT	17.5	22.6	31.5
*	TUSCARAWAS	-12.6	-9.5	-3.7
	WASHINGTON	-46.8	-44.8	-45.9
*	WAYNE	5.2	6.4	8.9

*Counties with more than Three-fourths of their total area within the Basin

BOATING

FIGURE 2





- Deficiency

- Surplus

MUSKINGUM RIVER BASIN

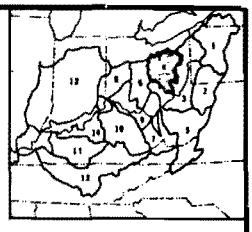
SCALE

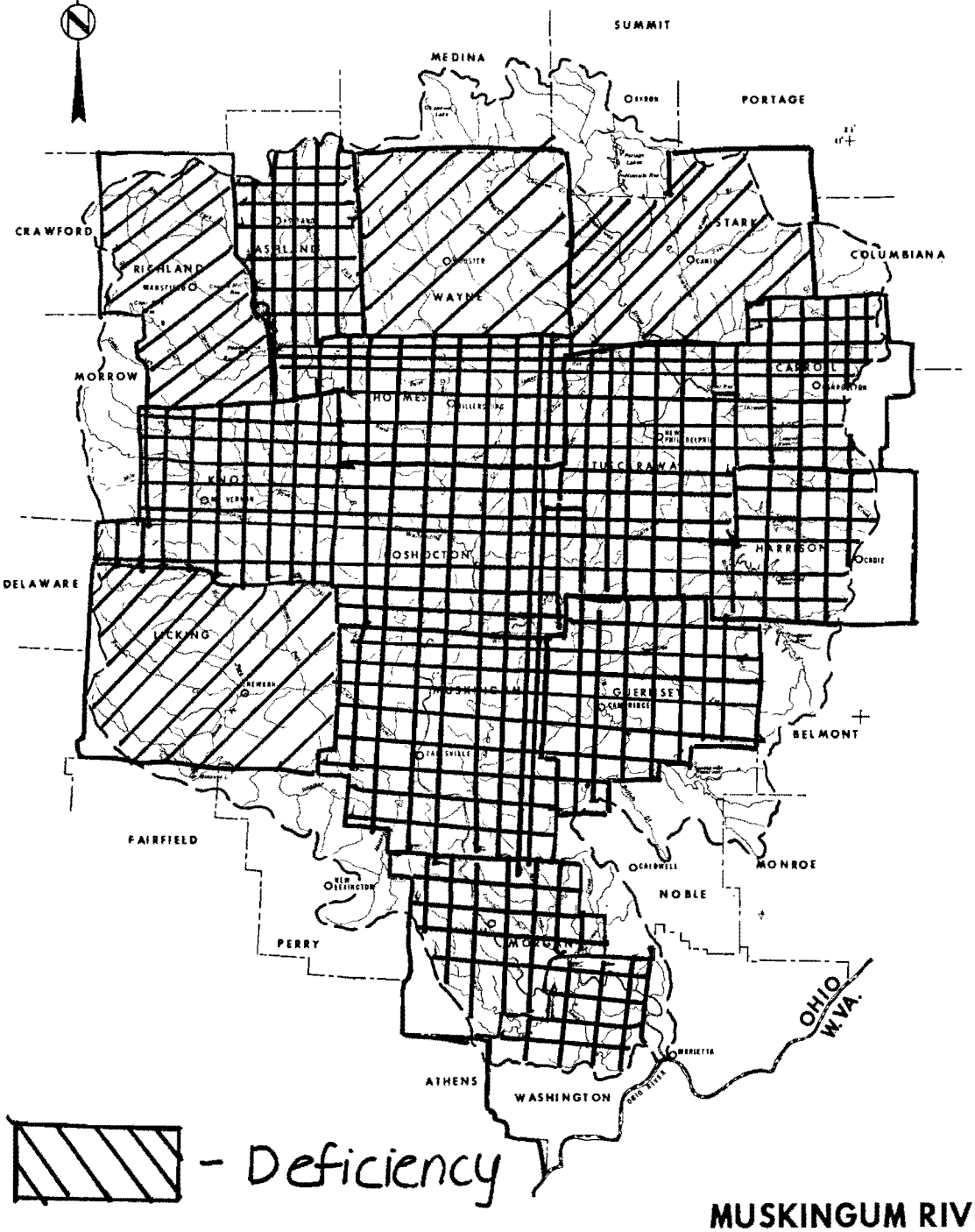
OHIO RIVER BASIN COMMISSION

CINCINNATI, OHIO 1973

FISHING

FIGURE 3





MUSKINGUM RIVER BASIN

SCALE

OHIO RIVER BASIN COMMISSION

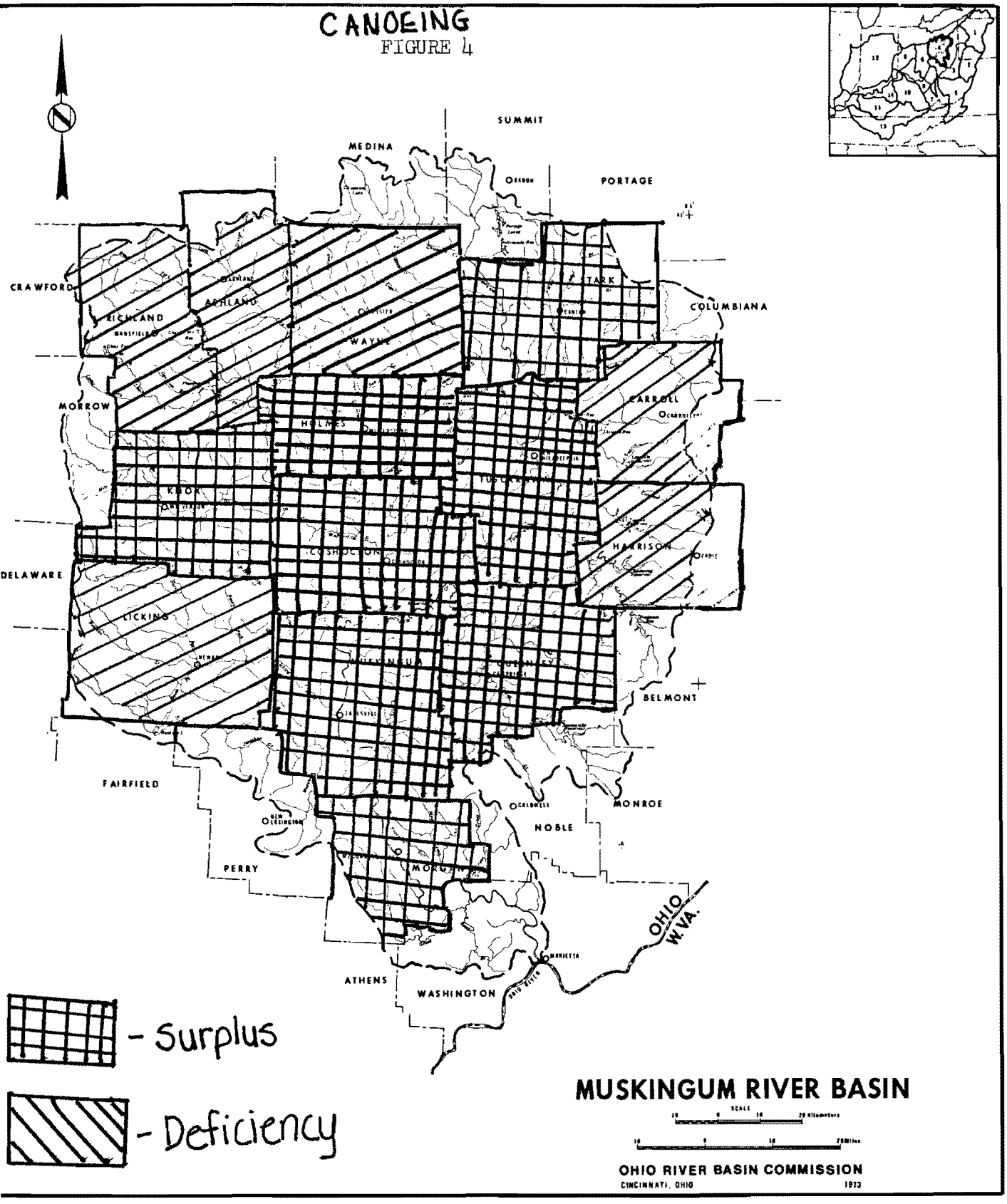
CINCINNATI, OHIO 1973

Of the three water-related activites considered, canoeing is the only one that displays a negative need for the next fifteen years. The major population centers of Columbiana and Summit Counties display the greatest needs for canoeing. Since canoeing is an activity that occurs in an area other than the county of residence more than fifty percent of the time,[5] it is highly probable that the counties with surpluses could answer an even greater part of the demand from counties with high needs.(Figure 4).

As a region, the Muskingum recreation needs average out so that the only great deficit that is basin-wide is boating. Columbiana, Summit, and Stark consistently show the highest needs in all areas, with the exception that Columbiana County displays a minor fishing surplus. Most of the central counties show sufficient supplies for fishing and canoeing activities and may be able to satisfy a part of the demand from the fringe counties. Only the Southeastern fringe counties display a surplus of boating acres.

[5] Ibid. p. 82

CANOEING
FIGURE 4



RECREATION POTENTIAL

Following from the determination of recreation needs comes the problem of meeting the demand for water-based recreation in the region. The Basin's natural diversity gives it great potential for future development. Several areas have been defined for potential future recreational use.

First, the State has plans to develop River access points on the Mohican and Walhonding Rivers. These sites would be approximately one to two acres in size and would increase the availability of the streams for boating and fishing. Acquisition costs would be provided for by the Waterway Safety Fund and the Land and Water Conservation Fund.

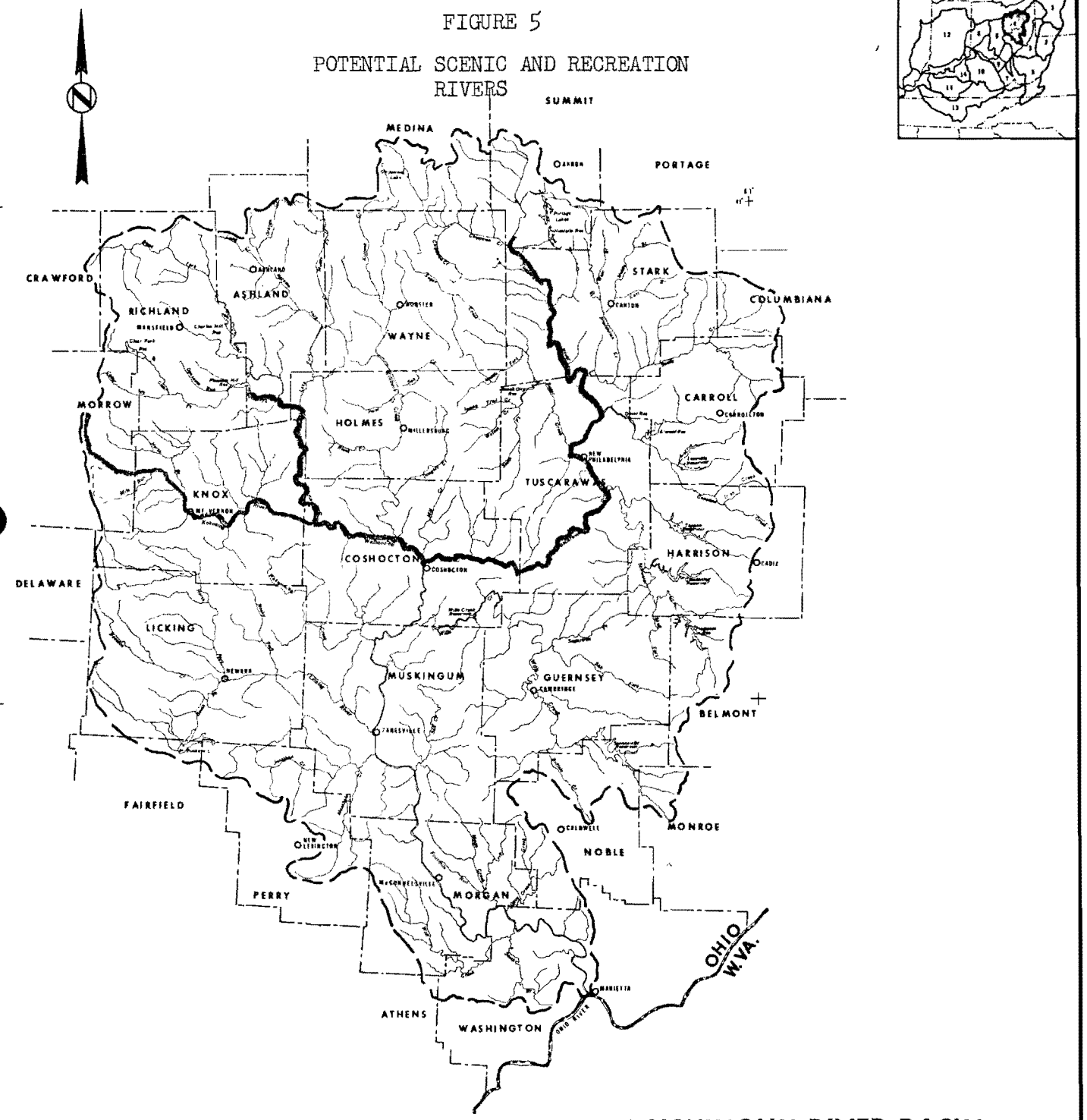
Also falling under State jurisdiction are proposals to designate five stream segments in the Basin as Scenic or Recreational Rivers worthy of preservation. Preliminary studies have been completed on all of the proposed segments. Four of these streams lie in the Walhonding River System. The first segment originates immediately south of the Pleasant Hill Dam on the Clear Fork of the Mohican River. It flows south-easterly through the Mohican State Forest and Park for about five miles to its confluence with the Mohican River. The Mohican then continues in an easterly direction until its confluence with the Lake Fork, where it starts a southerly course that ends with its confluence with the Kokosing to form the Walhonding River. From this point the Walhonding flows in a south-easterly direction to Coshocton. The total length composed by the Mohican, the Clear Fork of the Mohican, and the Walhonding is fifty-seven miles. The fourth segment under consideration is the Kokosing River. It flows in an easterly direction from its headwaters and begins flowing south-easterly near Fredericktown to its confluence with the Walhonding River, a total of thirty-five miles. The Walhonding River System lies within one hour's drive of the major urban areas of Akron, Canton, Massilon, Marion, Mansfield, Columbus, Newark, and Zanesville. There are thirty-one counties within a fifty-mile radius

of the area which have a population of 3.5 million, according to 1970 statistics. By 1985, the population is projected to exceed 4 million. The streams of the Walhonding System are important recreational assets. Although the system receives a great deal of recreational use, its recreation potential remains high. With sound management, preservation of the stream will be guaranteed and overuse avoided. The fifth segment is the Tuscarawas River, beginning at the Village of Clinton in Summit County, and ending at the River's confluence with the Walhonding River. This 106 mile long segment is a proposed recreational river; with increased access points it could answer some of the boating needs of the area. A major threat to the recreational use of the Tuscarawas comes from poor water quality due to industrial wastes and acid mine drainage from abandoned coal mines. Efforts to improve the water quality are underway, with full recreational use as one of the minimum criteria. Designation of these streams would increase the recreational potential of the region and aid in their preservation for future use. Any proposals for government projects, such as bridges, highways, or channel improvements to designated streams must be approved or disapproved by the Director of the Ohio Department of Natural Resources. The State also has the authority to declare areas in close proximity to designated rivers as unsuitable for strip mining for coal. One purpose of the designation of these streams as recreation or scenic rivers is to unite the agencies, groups, and citizens of the region in a joint effort toward the common goal of river preservation. Before the Clear Fork, Mohican, Walhonding, Kokosing, and Tuscarawas Rivers can be designated, citizens of each area must take steps to initiate plans for the preservation of the stream and must request the designation. (Figure 5)

Another potential recreational supply exists in the four Dry Reservoirs of the Muskingum Conservancy District. In order to maintain permanent pools in these reservoirs extensive modifications to each dam would be necessary. The Mohawk

FIGURE 5

POTENTIAL SCENIC AND RECREATION RIVERS



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and Bolivar projects show more potential for addition of conservation pools than the Dover and Mohicanville projects. Many factors must be examined when considering the establishment of permanent pools. The aquatic habitat and community structure would be changed. Fish production would increase, and waterfowl, amphibians, and muskrat would have additional habitat. Permanent impoundments would increase water-based recreation that would, in turn, stimulate local economies. However, there would be a resultant loss in agricultural lands, terrestrial habitat, and wildlife. The most serious negative impact would be a serious reduction in the flood control capacity. Nearly fifty percent of the Muskingum's flood storage is provided by the four dry reservoirs; but the possibility remains that flood control could still be maintained if just one of the reservoirs was permenently inundated. Use of the Bolivar and Mohawk Dry Reservoirs for future recreation supply is included in the Muskingum Conservancy District plans for future development. However, demand and economic feasibility would have to increase before any action would occur. Fifteen to twenty years may pass before any actual development is undertaken.

Plans exist for further recreational development at the Muskingum Conservancy District Lakes. Included in these plans are improvements to existing access areas or development of new access areas at all of the Reservoirs. Through development of these areas, fishing potential of the lakes is increased together with the scenic potential of the area. Other planned developments include provision of additional boat launching facilities at all ten lakes. Within the Muskingum Watershed Conservancy District are several subdistricts, some of which have plans that include provisions for recreation. South Licking has been working toward completion of a plan that includes fish and wildlife and recreation together with its basic plan for flood control. The Chippewa Subdistrict is in the implementation phase of a Public Law 566 watershed management project which includes recreation and fish and wildlife management as one of its purposes.

Also in the plans for future recreation by the Muskingum Conservancy District is a proposed reservoir project for Mansfield water supply in the Black Fork Subdistrict.

Lastly, in examining future recreation potential in the Muskingum drainage area, the State of Ohio has identified several areas in the Basin which show potential for recreational development. Specific site investigations have not been done. These areas in general show potential beeause of a combination of factors, including location, natural characteristics, and potential response to needs. Figure 6 shows these areas.

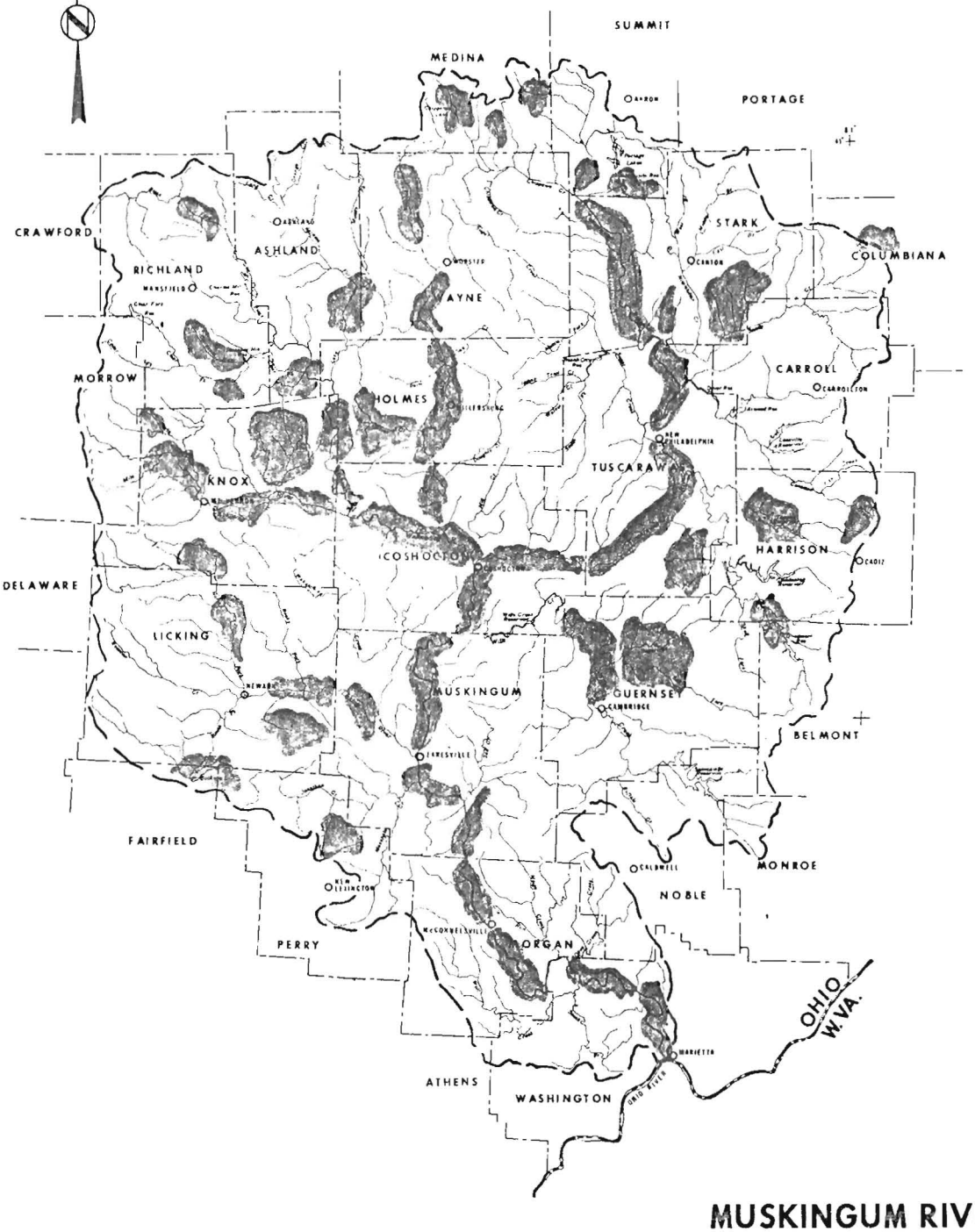
CONCLUSION

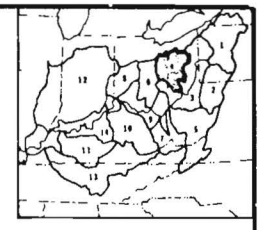
The Muskingum River drainage Basin is a region that displays great diversity. There are farmland plains and rolling hills. There are strip mines that dot the more rugged terrain of the region. Monstrous urban industrial areas provide sharp contrast to the sparsely populated Appalachian Region. There is one thing that ties all of these opposites together. The Muskingum and all of the streams that make up its system. represents the unifying thread.

Recreational use of the Muskingum's water resources has become increasingly important in recent years. Trends toward activities where man is in close commune with Nature have made new demands upon the lakes and streams of the Basin. The fuel crisis has increased the demand for facilities within a relatively short distance of the place of residence. Demand is projected to increase even more because a greater percentage of the population will be in an older age bracket, where passive activities such as boating and fishing have great appeal.

For the next fifteen years needs are highest around the major cities. The Counties of Stark and Summit consistently display the greatest water-based recreation deficit. Maintenance of high-quality recreational resources in the other counties of the Basin may help to increase the supply accessible

FIGURE 6
POTENTIAL RECREATION AREAS





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to these urban areas. The State has identified five potential future recreation areas in Stark and Summit Counties that are within the hydrologic boundary of the Muskingum River. If demand remains high and funds can be acquired, these areas may be developable by 1990. It is interesting to note that virtually all of the potential areas identified by the State are near lakes or streams. Because water-based recreation is generally removed from urban and industrial areas, residents of the population centers must go outside of the urban limits for these activities. Transfer of demand is thus a highly important factor in determining the location of future supply.

The planned additional boat ramps will help to satisfy the extremely high demands for boating in the region until more adequate supplies can be explored and developed. Although fishing and canoeing are more available in terms of supply, the planned access points will create more recreational opportunity for these activities.

Possible designation of the five river segments will not only provide more aesthetically pleasing recreational opportunity but also will thrust the responsibility of river preservation on those who live near it and those who use it. Acid mine drainage and sediment load on the streams may be reduced through efforts of this type.

The major problem concerning water-related recreation in the region is a lack of coordination among the various agencies and localities involved. Budgetary restraints make development in some areas impossible. With joint effort, the possibility of new funding sources exists. Increasing public awareness of the resources available to them rarely results in overuse, but rather in an interest in their availability for continued use through proper management.

The Muskingum Basin has a great deal to offer in terms of recreational

opportunity. Its potential for additional supply is no where near realized. As regional pride increases, the Muskingum Basin will see further improvements in the coming years.

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